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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/811,204

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Daryl Chapman

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1948

65798

7590

03/04/2009

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EXAMINER

LEWIS, BEN

ART UNIT

PAPER NUMBER

1795

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/811,204	<b>Applicant(s)</b> CHAPMAN ET AL.	
	<b>Examiner</b> Ben Lewis	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 November 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,5,10 and 31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,5,10 and 31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **Detailed Action**

As a supplement to the last office action mailed July 18<sup>th</sup>, 2008 please be advised after reviewing the Appeal Brief it was decided to reopen prosecution. Applicant is entitled to file an Appeal Brief in response to the office action mailed July 18<sup>th</sup>, 2008.

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Paragraphs [0019] and [0020] of Applicant's specification states:

According to the invention, the system 10 employs a technique for safely bleeding the anode exhaust gas from the fuel cell stack 12 without the need for employing a combustor. The system 10 includes an accumulator 26, such as a suitable

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tank, that accumulates the purged anode exhaust gas so that it can be safely bled to the environment or otherwise at relatively low non-combustible hydrogen concentrations. A purge valve 28 is coupled to the exhaust line 22. The valve 28 is selectively opened to allow the anode exhaust gas to be accumulated by the accumulator 26 (Paragraph 0019).

In one embodiment, the valve 28 is a spring-biased solenoid control valve, where the spring bias default position causes the valve 28 to be closed. By applying a potential to the solenoid of the valve 28, it slides against the bias of the spring so that the valve 28 is opened and the anode exhaust gas can flow into the accumulator 26. Therefore, the combustible anode exhaust gas is not released from the system 10 when it is purged from the fuel cell stack 12, but is safely contained within the accumulator 26 (Paragraph 0020).

Since there is no teaching of “where the rate that the anode exhaust gas is bled from the accumulator is less than the rate that the anode exhaust gas is purged into the accumulator through the purge valve” then there appears to be no support for the newly added claim 19. (Examiner notes that there is no teaching of the relative purge rates of the bleed valve and the purge valve in Applicants specification);

2. The claim rejections under 35 U.S.C. 112, second paragraph, on claim 3 is withdrawn, because the claims have been cancelled.

### **Claim Rejections - 35 USC § 103**

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada et al. (JP 11-191422) in view of James et al. (U.S. Patent No. 6,406,805 B1) and Danielson et al. (U.S. Patent No. 6,003,363).

With respect to claim 1, Hamada et al. disclose a fuel cell system (title) which comprise a fuel cell stack (10) with cathode input gas supply fan (70) and hydrogen anode in put gas supply line (46). (See Figs. 1 and 2).

With respect to an accumulator, Hamada et al. disclose a hydrogen/water separator (54) (accumulator) connected to the hydrogen exhaust line (Paragraphs 0019-0021).

With respect to a bleed valve for selectively bleeding the anode exhaust gas accumulated in the accumulator, Hamada et al. teach that valve (80) (bleed valve) is connected to the hydrogen/water separator (accumulator) (Paragraph 0022-0023).

With respect to combining the bleed anode exhaust gas from the bleed valve with cathode exhaust gas, Hamada et al. teach that unreacted gas from the anode flows to mixer (78) and cathode air side is also connected to mixer (78) by air exhaust pipe (86) (Paragraphs 0022-0024).

Hamada et al. do not specifically teach a purge valve coupled to the anode exhaust line. However, James et al. disclose a fuel cell system wherein a fuel cell controller 24 controls the operation of the fuel cell 10. When the controller 24 determines that the fuel cell 10 requires purging, the controller 24 signals a three-way valve 26 (purge valve) to move from a closed position to a first position. When the valve 26 is in the first position, the purged hydrogen, other gases, and water are directed to a water removal device 28 (accumulator) (Col 3 lines 64-67; Col 4 lines 1-25). Therefore it would have been obvious to one of ordinary skill in the art to incorporate the purge valve of James et al. into the fuel cell system of Hamada et al. in order to control purging of hydrogen exiting the fuel cell and prevent build up of hydrogen in the fuel cell (Col 4 lines 45-67).

Hamada et al. as modified by James et al. do not specifically teach the bleed valve being a fixed orifice. However Danielson et al. disclose a leak detection apparatus (title) wherein valve 100 is preferably preset by the manufacturer, and the end user would not alter the setting of the valve so that the valve 100 acts as a fixed orifice in allowing a preset rate of fluid flow therethrough. Danielson et al. also teach that valve 100 could be replaced by a fixed orifice if desired. (Col. 8 lines 45-57). Therefore it would have been obvious to one of ordinary skill in the art to use the fixed orifice of Danielson et al. in the system of Hamada et al. as modified by James et al. in order to have the flowrate of the purged gas fixed and unaltered so that the purge system will function unobstructed.

With respect to claim 5, Hamada et al. teach that unreacted gas from the anode flows to mixer (78) and cathode air side is also connected to mixer (78) by air exhaust pipe (86) (Paragraphs 0022-0024). Hamada et al. teach that the mixed anode and cathode exhaust is discharged from an exhaust duct (Paragraph 0024) (See Figs 1 and 2).

With respect to claim 31, Hamada et al. teach that under heavy loads gas is purged from valve 82 (second orifice) in addition to valve 80 (Paragraph 0033- 0034).

5. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada et al. (JP 11-191422) in view of James et al. (U.S. Patent No. 6,406,805 B1), Danielson

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et al. (U.S. Patent No. 6,003,363) and further in view of Kumar (U.S. Patent No. 5,785,298).

With respect to claim 10, Hamada et al. as modified by James et al. and Danielson et al. disclose a fuel cell system (title) which comprise a fuel cell stack (10) with cathode input gas supply fan (70) and hydrogen anode input gas supply line (46). (See Figs. 1 and 2). Hamada et al. as modified by James et al. and Danielson et al. teach that valve (80) (bleed valve) is connected to the hydrogen/water separator (accumulator) (Paragraph 0022-0023). Hamada et al. as modified by James et al. and Danielson et al. do not disclose wherein the purge valve is a spring-based solenoid valve. However, Kumar discloses a proportional solenoid-controlled fluid valve assembly (title) wherein, solenoid valves disclosed by Kumar are used in precision fluid flow regulation systems, for example of the type that require precise regulation of the rate of flow of a fluid, such as pneumatic or hydraulic regulation, and is particularly directed to the configuration of a new and improved solenoid-driven valve control structure, through which the output force and axial displacement imparted by the solenoid to a spring-biased valve control mechanism, and thereby fluid flow through an associated fluid flow-regulating valve assembly, may be controlled so as to be proportional to the application of an electrical current to the solenoid (Col 1 lines 1-17). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute a spring-based solenoid controlled valve of Kumar for the purge valve of Hamada et al. as modified by James et al. and Danielson et al. because Kumar teach that fluid flow through an associated fluid flow-regulating valve



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assembly, may be controlled so as to be proportional to the application of an electrical current to the solenoid (Col 1 lines 1-17).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ben Lewis whose telephone number is 571-272-6481. The examiner can normally be reached on 8:30am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ben Lewis/  
Examiner, Art Unit 1795

/PATRICK RYAN/

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Supervisory Patent Examiner, Art Unit 1795